

TITLE:

QUIC Evaluation via ns-3 Simulations

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CONTEXT:

QUIC [1] is a network transport protocol specifically designed to speed up web communications. QUIC provides rate and congestion control, security, and multiplexing. However, transport protocols are usually implemented directly in the kernel making changes slow to get adopted and widely deployed. To tackle this issue, QUIC is implemented in the user space, on top of UDP. The idea of QUIC is to multiplex multiple HTTP requests in UDP flows such that each one can be managed independently. By being implemented over UDP, it means any application can provide its own congestion control instead of having to rely on the kernel but also support for seamless mobility. Also, in favourable cases, QUIC ensures 0 RTT overhead.

PROBLEM STATEMENT:

QUIC is not yet widely deployed and, hence, is not possible to evaluate it in all possible application scenarios. In this project, the student will extensively test the QUIC implementation of Chromium [2] and compare performances with TCP. Attention will be paid to the impact of QUIC on security.

REFERENCES:

[1] <https://www.ietf.org/proceedings/88/slides/slides-88-tsvarea-10.pdf>

[2] R. Hamilton, J. Iyengar, I. Swett, A. Wilk. QUIC: A UDP-Based Secure and Reliable Transport for HTTP/2. draft-hamilton-early-deployment-quic-00.txt

[3] <https://www.chromium.org/quic>